1.   (Currently amended) A method for speculatively reusing regions of code, the method comprising:

identifying a reuse region and a data input to the reuse region;

searching ~~determining whether a data output of the reuse region is contained within reuse region instance information pertaining to~~ a buffer storing a plurality of instances of the reuse region for a valid matching instance that has a matching data input and cannot be potentially invalidated; and

~~when the data output is not contained within~~ if the ~~reuse region instance information~~ valid matching instance is not found, predicting, for the reuse region, a current set of live-out registers and an output value for each live-out register in the set ~~the data output of the reuse region based on the~~ using reuse region instance information in the buffer.

2.   (Currently amended) The method of claim 1 wherein ~~determining whether the reuse region instance information contains a data output~~ searching the buffer comprises:

determining whether the data input to the reuse region matches any input information within the reuse region instance information; and

~~when~~ if the data input matches input information within the ~~plurality of instances~~ reuse region instance information, determining whether the reuse region is identified by a normal reuse instruction.

3.   (Original) The method of claim 1 wherein the reuse region instance information includes input information and output information for each instance of the reuse region.

4.   (Original) The method of claim 3 wherein the reuse region instance information

further includes a plurality of confidence counters for each live-out register of the reuse

region, each of the plurality of confidence counters being associated with a certain

prediction technique.

5.   Cancelled.

6.   (Currently amended) The method of claim [[5]] 4 wherein predicting an output

value for each live-out register further comprises:

        comparing a plurality of confidence counters associated with said each live-out

register;

        selecting the at least one an optimal prediction technique for said each live-out

register from multiple prediction techniques based on comparison upon a plurality of

confidence counters associated with the live-out register, each of the plurality of

confidence counters corresponding to a certain prediction technique; and

        selecting the output value for said each live-out register using the optimal

prediction technique.

7.   (Currently amended) The method of claim 6 wherein multiple the optimal

prediction techniques comprise technique is any one of a context-based prediction

technique, a stride prediction technique, and a last value prediction technique.

8. (Currently amended) An apparatus comprising:

a buffer to hold reuse region instance information pertaining to a plurality of instances of a reuse region; and

a processing core to search the buffer for a valid matching instance that has a data input matching a current data input of the reuse region and cannot be potentially invalidated, to predict for the reuse region a current set of live-out registers and an output value for each live-out register in the set a data output of the reuse region based on the reuse region instance information if the valid matching instance is not found in the buffer, and to speculatively execute instructions using [[the]] predicted data output values of the reuse region.

9. Cancelled.

10. (Currently amended) The apparatus of claim 9 wherein the processing core is further configured to search the buffer for a valid matching instance and to determine by finding an instance with data input matching the current data input of the reuse region and determining whether the reuse region is identified by a normal reuse instruction.

11. (Original) The apparatus of claim 8 wherein the reuse region instance information includes input information and output information for each instance of the reuse region.

12. (Original) The apparatus of claim 11 wherein the reuse region instance information further includes a plurality of confidence counters for each live-out register

of the reuse region, each of the plurality of confidence counters being associated with a certain prediction technique.

13. (Original) The apparatus of claim 8 wherein the buffer includes a prediction list having a plurality of pointers to reuse region instances held in the buffer, a pointer to the most currently used instance being located on the top of the prediction list and a pointer to the least currently used instance being located at the bottom of the prediction list.

14. (Original) The apparatus of claim 8 wherein the buffer includes a value prediction table having an entry that includes a predicted output value, the predicted output value being located using an index.

15. (Currently amended) The apparatus of claim [[8]] 13 wherein the processing core is further configured to predict a current set of live-out registers of the reuse region, and to predict an output value for each live-out register within the current set of live-out registers using at least one prediction technique and a prediction list maintained in the buffer by comparing a plurality of confidence counters associated with said each live-out register, selecting an optimal prediction technique for said each live-out register based on comparison, and

selecting the output value for said each live-out register using the optimal prediction technique.

16. Cancelled.

17.   (Currently amended) The apparatus of claim 13 wherein: ~~multiple prediction techniques comprise a context-based prediction technique, a stride prediction technique, and a last value prediction technique and wherein~~

the prediction list points to_a [[the]] most recently used instance ~~when~~ if the optimal prediction technique is a last value prediction technique ~~is used~~,:

the prediction list points to two most recently used instances ~~when~~ if the optimal prediction technique is a stride prediction technique ~~is used~~,; and

the prediction list points to instances associated with a corresponding live-out register ~~when~~ if the optimal prediction technique is a context-based prediction technique ~~is used~~, the associated instances being used to calculate an index pointing to a predicted output value in a value prediction table maintained in the buffer.

18.   (Currently amended) A system comprising:

a memory to store regions of code; and

a processor, coupled to the memory, to identify a reuse region in the regions of code, to search ~~determine whether a data output of the reuse region is contained within reuse region instance information pertaining to~~ a buffer storing a plurality of instances of the reuse region for a valid matching instance that has a matching data input and cannot be potentially invalidated, and ~~when the data output is not contained within reuse region instance information~~ to predict for the reuse region a current set of live-out registers and an output value for each live-out register in the set ~~the data output of the reuse region based on the~~ using reuse region instance information in the buffer if the valid matching instance is not found.

19.   Cancelled.

20.   (Currently amended) The system of claim [[19]] 18 wherein the reuse region

instance information includes input information and output information for each instance

of the reuse region.

21.   (Currently amended) The system of claim [[19]] 18 wherein the reuse region

instance information includes a plurality of confidence counters for each live-out register

of the reuse region, each of the plurality of confidence counters being associated with a

certain prediction technique.

22.   (Currently amended) The system of claim [[19]] 18 wherein the buffer includes a

prediction list having a plurality of pointers to reuse region instances held in the buffer.

23.   (Original) The system of claim 19 wherein the buffer includes a value prediction

table having an entry that includes a predicted output value, the predicted output value

being located using an index.

24.   (Currently amended) A computer readable medium comprising instructions,

which when executed on a processor, perform a method for speculatively reusing regions

of code, the method comprising:

        identifying a reuse region and a data input to the reuse region;

        searching ~~determining whether a data output of the reuse region is contained~~

~~within reuse region instance information pertaining to~~ a buffer storing a plurality of

instances of the reuse region <u>for a valid matching instance that has a matching data input and cannot be potentially invalidated</u>; and

~~when the data output is not contained within~~ if the ~~reuse region instance information~~ <u>valid matching instance is not</u> found, predicting<u>, for the reuse region, a current set of live-out registers and an output value for each live-out register in the set</u> ~~the data output of the reuse region based on the~~ <u>using</u> reuse region instance information <u>in the buffer</u>.

25.   (Currently amended) The computer readable medium of claim 24 wherein ~~determining whether the reuse region instance information contains a data output~~ <u>searching the buffer</u> comprises:

determining whether the data input to the reuse region matches any input information within the reuse region instance information; and

~~when~~ <u>if</u> the data input matches input information within the ~~plurality of instances~~ <u>reuse region instance information</u>, determining whether the reuse region is identified by a normal reuse instruction.

26.   (Original) The computer readable medium of claim 24 wherein the reuse region instance information includes input information and output information for each instance of the reuse region.

27.   (Original) The computer readable medium of claim 26 wherein the reuse region instance information further includes a plurality of confidence counters for each live-out

register of the reuse region, each of the plurality of confidence counters being associated with a certain prediction technique.

28. Cancelled.

29. (Currently amended) The computer readable medium of claim [[28]] 27 wherein predicting an output value for each live-out register further comprises :

comparing a plurality of confidence counters associated with said each live-out register;

selecting the at least one an optimal prediction technique for said each live-out register from multiple prediction techniques based on comparison upon a plurality of confidence counters associated with the live-out register, each of the plurality of confidence counters corresponding to a certain prediction technique; and

selecting the output value for said each live-out register using the optimal prediction technique.

30. (Currently amended) The computer readable medium of claim 29 wherein multiple the optimal prediction techniques comprise technique is any one of a context-based prediction technique, a stride prediction technique, and a last value prediction technique.